

### **Material Safety Data Sheet**

### **PIVALOYL CHLORIDE**

#### **Section 1 - Product and Company Information**

Substance	: Trimethylacetyl Chloride, 2,2-Dimethyl propanoyl chloride
Trade Name	: Pivaloyl Chloride
Chemical family	: Carboxylic Acid Chloride
Company	: Shiva Pharmachem Ltd. Plot No. 588, Village Luna – 391440 Taluka Padra, District: Vadodara, Gujarat, India.
Phone No.	: +91 2662-221021 / 224360
Fax No.	: +91 2662 223314

#### **Section 2 – Hazards Identification**

##### **2.1 Classification of the substances or mixture**

##### **Classification according to regulations (EC) no 1272 / 2008 (EU GHS/CLP)**

Flammable liquid (Category 2), Skin Corrosion, (Category 1B),  
Acute toxicity, inhalation, (category 2), Acute toxicity, oral, (category 4)

##### **Classification according to EU directives 67/548/EEC or 1999/45/EC**

Highly Flammable. Reacts violently with water. Harmful if swallowed. Causes burn. Very toxic by inhalation

##### **2.2 Labeling elements**

##### **Labeling according to EC 1272 / 2008 (CLP)**

##### **Pictogram**



##### **Single word Hazard Elements**

##### **Danger**

H225	Highly flammable liquid and vapour.
H302	Harmful if swallowed.
H314	Causes severe skin burn and eye damage
H330	Fatal if inhaled

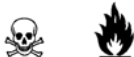
##### **Precautionary statements**

P210	Keep away from heat/spark/open flame/hot surface - No smoking.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P280	Wear protective gloves/protective clothing/eye and face protection
P284	Wear respiratory protection
P305 + P351 + P338	IF IN EYES: Rinse cautiously for several minutes.
P310	Immediately call physician

##### **According to EU directives 67/548/EEC as amended**

## **Material Safety Data Sheet**

### **Hazard symbol(s)**



### **R PHRASE (s)**

**R11** Highly flammable.  
**R14** Reacts violently with water.  
**R22** Harmful if swallowed.  
**R26** Very toxic by inhalation.  
**R35** Causes severe burn.

### **S PHRASE (s)**

**S16** Keep away from source of ignition – No smoking  
**S26** In case of contact with eyes rinse immediately with plenty of water and seek medical advice.  
**S36/37/39** Wear suitable protective clothing, gloves and eye/face protection.  
**S45** In case of accident or you feel unwell, seek medical advice. (Show the label where possible)

### **2.3 Other hazard**

Lachrymator.

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## **Section 3 – Composition / Information on Ingredients**

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Product Name	CAS No.	EC NO.	Mol. Formula	Mol. Weight.
Pivaloyl Chloride	3282-30-2	221-921-6	C <sub>5</sub> H <sub>9</sub> ClO	120.58 g/mol

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## **Section 4 – First Aid Measures**

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### **4.1 Description of first aid measure**

#### **General advice**

Consult to physician. Show this safety data to the doctor.

#### **Inhalation**

If inhaled, move person into fresh air, If Not breathing give artificial respiration. Consult physician.

#### **Skin Contact**

In Case of skin contact, flush with copious amounts of water for at least 15 minute.  
Remove contaminated clothing and shoes. Call a Physician.

#### **Eye Contact**

In Case of contact with eyes, flush with copious amounts of water for at least 15 minutes.  
Assure adequate flushing by separating the eyelids with fingers. Call a physician.

#### **Ingestion**

If swallowed, do not induce vomiting, wash out mouth with water provided person is conscious. Call a physician immediately.

### **4.2 Most important symptoms and effect, both acute and delayed.**

Material is extremely destructive to tissues of mucous membrane and upper respiratory tract, eyes and skin. Cough, shortness of breath, headache, nausea.

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## **Section 5 – Fire Fighting Measures**

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**FLASH POINT**

**19 °C**

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**AUTOIGNITION****Lower Explosion Limit****Upper Explosion Limit****FLAMMABILITY****455 °C****1.95 % (v)****7.4 % (v)****Highly flammable****CONDITIONS OF FLAMMABILITY**

Water hydrolyzes material liberating acidic gas which in contact with metal surfaces can generate flammable and/or explosive hydrogen gas.

**EXTINGUISHING MEDIA**

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

Unsuitable: Do not use water.

**SPECIAL RISKS**

Specific Hazard(s): Flammable liquid. Vapor may travel considerable distance to source of ignition and flash back. Emits toxic fumes under fire conditions.

Explosion Hazards: Vapor may travel considerable distance to source of ignition and flash back. Container explosion may occur under fire conditions.

**SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS**

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

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### **Section 6 – Accidental Release Measures**

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**PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL**

Evacuate area. Shut off all sources of ignition.

**PROCEDURE(S) OF PERSONAL PRECAUTION(S)**

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

**METHODS FOR CLEANING UP**

Cover with dry-lime, sand, or soda ash. Place in covered containers using non-sparking tools and transport outdoors. Ventilate area and wash spill site after material pickup is Complete.

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### **Section 7 - Handling and Storage**

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**HANDLING**

**Directions for Safe Handling:** Do not breathe vapor. Do not allow to get in eyes, on skin, and on clothing. Avoid prolonged or repeated exposure.

**STORAGE**

**Conditions of Storage:** Keep tightly closed. Keep away from heat, sparks, and open flame. Store in a cool dry place.

Incompatible Materials: Do not allow contact with water

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### **Section 8 - Exposure Controls / Personal Protection**

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**ENGINEERING CONTROLS**

Safety shower and eye bath. Use no sparking tools. Use only in a chemical fume hood.

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### **GENERAL HYGIENE MEASURES**

Wash contaminated clothing before reuse. Wash thoroughly after handling. Discard contaminated shoes.

### **PERSONAL PROTECTIVE EQUIPMENT**

**Respiratory Protection:** Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

**Hand Protection:** Compatible chemical-resistant gloves.

**Eye Protection:** Chemical safety goggles.

**Special Protective Measures:** Face shield (8-inch minimum).

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## **Section 9 - Physical and Chemical Properties**

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Appearance Color	: Colorless
Form	: Clear liquid
Odor	: Pungent
pH	: Acidic
BP/BP Range	: 105.0 - 108.0 °C
MP/MP Range	: - 56.0 °C
Flash Point	: 19 °C Method: closed cup
Flammability	: Highly flammable
Auto ignition Temp	: 455 °C
Explosion Limits Lower	: 1.9 % (v)
Upper	: 7.4 % (v)
Vapor Pressure	: 40 mbar at 20 °C
Density	: 0.98 g/cm <sup>3</sup> at 20 °C
Partition Coefficient	: n-Octanol / water (log Pow) 1.45
Dynamic Viscosity	: 0.86 Pas at 20 °C
Vapor Density	: > 1 g/l
Volatility	: 100%
Solvent Content	: Nil
Water Content	: Reacts violently with water hence not applicable.
Solubility	: Miscible with toluene, methylene chloride, ethylene chloride etc.

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## **Section 10 - Stability and Reactivity**

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### **STABILITY:**

Stable under normal conditions of temperatures and pressure

### **Conditions to Avoid:**

Do not allow water to enter container because of violent reaction.

## **Material Safety Data Sheet**

**Materials to Avoid:**

Alcohols, Oxidizing agents, Strong bases.

**HAZARDOUS DECOMPOSITION PRODUCTS**

Carbon monoxide, Carbon dioxide, Hydrogen chloride gas

**HAZARDOUS POLYMERIZATION:**

Will not occur

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### **Section 11 - Toxicological Information**

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**ACUTE TOXICITY**

<b>Oral</b>	: LD50	Rat	638 mg/kg
<b>Inhalation</b>	: LC50	Rat	>1.43 - < 1.64 mg/l 4 hrs
<b>Dermal</b>	: LD50	Rabbit	>2010 mg/kg

**IRRITATION / CORROSION**

Eyes

Rabbit

Remarks: Risk of serious damage to eyes

Skin

Rabbit

Remarks: Corrosive

**SIGNS AND SYMPTOMS OF EXPOSURE**

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**ROUTE OF EXPOSURE****Skin Contact:**

Causes burns.

**Skin Absorption:**

May be harmful if absorbed through the skin.

**Eye Contact:**

Causes burns.

Lachrymator.

**Inhalation:**

Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. May be fatal if inhaled.

### **Material Safety Data Sheet**

#### **Ingestion:**

Harmful if swallowed.

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### **Section 12 - Ecological Information**

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#### **ECOTOXICOLOGICAL EFFECTS**

Test Type	: LC50 Fish
Species	: Onchorhynchus mykiss (Rainbow trout)
Time	: 96 h
Value	: > 300 mg/l
Test Type	: EC50 Daphnia
Species	: Daphnia magna
Time	: 24 h
Value	: 320 mg/l
Test Type	: EC50 Algae
Species	: Scenedesmus subspicatus
Time	: 96 h
Value	: 75 mg/l

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### **Section 13 - Disposal Considerations**

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#### **SUBSTANCE DISPOSAL**

Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

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### **Section 14 - Transport Information**

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#### **DOT Regulations**

UN No.	: 2438
Hazard Class	: 6.1
Packing Group	: I
Poison Inhalation Hazard	: Yes
Sub Risk	: 3, 8
Proper Shipping Name	: Trimethylacetyl chloride
Label	: 6.1, 3, 8

#### **RID/ADR**

UN No.	: 2438
Hazard Class	: 6.1
PG	: I
Subrisk	: 3, 8
Proper Shipping Name	: Trimethylacetyl chloride

#### **IMDG**

UN No.	: 2438
Hazard Class	: 6.1
PG	: I

### **Material Safety Data Sheet**

Subrisk : 3, 8  
Proper Shipping Name : TRIMETHYL ACETYL CHLORIDE  
Marine Pollutant : No  
Severe Marine Pollutant : No

#### **IATA**

UN No. : 2438  
Hazard Class : 6.1  
PG : I  
Subrisk : 3, 8  
Proper Shipping Name : Trimethylacetyl chloride  
Inhalation Packing Group I : Yes

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### **Section 15 - Regulatory Information**

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#### **CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES**

##### **INDICATION OF DANGER : F-T+**

Highly Flammable.

Very toxic.

##### **R-PHRASES:** 11-14-22-26-35

Highly flammable. Reacts violently with water. Harmful if swallowed. Causes burns. Very toxic by inhalation.

##### **S-PHRASES:** 16-26-36/37/39-45

Keep away from sources of ignition - no smoking. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (Show the label where possible)

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### **Section 16 – Additional Information**

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#### **NFPA Hazard Code**

HEALTH: 3 FIRES: 3 REACTIVITY: 2 SPECIAL:

#### **HMIS III rating**

Health: 3 Flammability: 3 Physical Hazard: 2

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